REGULATION 8
ORGANIC COMPOUNDS
RULE 5
STORAGE OF ORGANIC LIQUIDS

INDEX

8-5-302 Above Ground Gasoline Tanks Smaller than 20,000 gal ~~75 m³~~
8-5-303 Above Ground Storage Tanks Greater than 10,000 gal ~~37.5 m³~~ and less than 20,000 gal ~~75 m³~~
8-5-304 Storage Tanks Larger than 20,000 gal ~~75 m³~~
8-5-305 Storage Tanks Storing Organic Liquids with a True Vapor Pressure Greater than ~~569 mm Hg (~~11 psia~~)~~
8-5-310 Deleted May 4, 1988
8-5-311 Vapor ~~Loss~~ Control Device Requirements
8-5-312 Deleted January 20, 1993
8-5-313 Deleted January 20, 1993
8-5-314 Deleted January 20, 1993
8-5-320 Tank Fitting Requirements
8-5-321 Primary Seal Requirements
8-5-322 Secondary Seal Requirements
8-5-323 Deleted January 20, 1993
8-5-324 Deleted January 20, 1993
8-5-325 Deleted January 20, 1993
8-5-326 Deleted May 4, 1988
8-5-327 Deleted May 4, 1988
8-5-328 Tank ~~Cleaning~~ Degassing Requirements
8-5-329 Ozone Excess Day Prohibition
8-5-330 Viewport Installation
8-5-331 Seal Replacement
8-5-332 Liquid Balancing

8-5-400 ADMINISTRATIVE REQUIREMENTS

8-5-401 Primary Seal Inspection
8-5-402 Secondary Seal and Fitting Inspection
8-5-403 Internal Floating Roof Tank Visual Inspection
8-5-404 Certification
8-5-405 Information Required
8-5-406 Fitting and Pressure-Vacuum Valve Inspection
8-5-407 Inspection and Maintenance Plan
8-5-408 Self Reporting
8-5-410 Deleted May 4, 1988

8-5-500 MONITORING AND RECORDS

8-5-501 Records
8-5-502 Tank ~~Cleaning Degssing~~Degassing Annual Source Test Requirement
8-5-503 Portable Hydrocarbon Detector
8-5-504 Recordkeeping Requirements
8-5-505 Pressure Release
8-5-506 Unsafe to Inspect

8-5-600 MANUAL OF PROCEDURES

8-5-601 Analysis of Samples, Reid Vapor Pressure
8-5-602 Analysis of Samples, True Vapor Pressure
8-5-603 Determination of Emissions
8-5-604 Determination of Applicability
8-5-605 Pressure-Vacuum Valve Gas Tight Determination
8-5-606 Determination of Low Vapor Pressure Liquid
8-5-607 Determination of Lower Explosive Limit

REGULATION 8
ORGANIC COMPOUNDS
RULE 5
STORAGE OF ORGANIC LIQUIDS

(Adopted January 1, 1978)

8-5-100 GENERAL

8-5-101 Description: The purpose of this Rule is to limit emissions of total organic compounds from storage tanks. Note: New storage tanks may also be subject to Regulation 10 and storage tanks located at bulk plants may also be subject to the requirements of Regulation 8, Rule 6 or Rule 33.

(Amended September 4, 1985; May 4, 1988; January 20, 1993)

8-5-110 Exemptions: This Rule does not apply to emissions from the following sources:

110.1 Stationary storage tanks having a capacity of less than ~~1.0 m^3 (264~~ 260 gal~~)~~.

110.2 Any stationary storage tank installed prior to January 4, 1967, which is not used for storage of gasoline to be dispensed to internal combustion engine fuel tanks, and is either of a capacity of less than ~~7.6 m^3 (2,008~~2,000 gal~~)~~, or an underground tank with an offset fill line.

110.3 Any above ground gasoline tank of ~~7.6 m^3 (2,008~~2,000 gal~~)~~ or less capacity installed and in service prior to January 9, 1976, and equipped with a submerged fill pipe. (Amended May 4, 1988; January 20, 1993)

8-5-111 Limited Exemption, Tank Removal From and Return to Service: The requirements of Section~~s~~ 8-5-311 shall not apply to storage tanks during tank cleaning, stock change, tank and roof repairs, ~~or~~ removal of contaminated stock, ~~decommisioning~~decommissioning or temporary removal from service provided that the following is accomplished:

111.1 Three days prior to such work being done, written notice is received by the APCO; or prior to such work being done, approval is granted by the APCO during District working hours and written notice is received by the APCO within three days after such work has been done; or outside of District working hours, prior to such work being done, the APCO is notified and written notice is received by the APCO within three days after such work has been done.

111.2 The tank is in compliance prior to notification. A written certification of the compliance shall be made available to the APCO upon request.

111.3 When the floating roof is resting on the leg supports, the process of filling, emptying, and refilling shall be continuous and shall be accomplished as rapidly as possible.

111.4 Vapor recovery shall be used on tanks so equipped during filling and emptying procedures.

111.5 Emissions shall be minimized during the period of exemption. As much product as possible shall be drained before any hatches are opened, and tank degassing and associated emission control system shall be connected and operating as soon as possible.

111.6 Written notice is not required when returning a tank to service after the above listed work has been completed.

111.7 The requirements of Sections 8-5-328 and 329 are satisfied.

(Amended January 20, 1993)

8-5-112 Limited Exemption, ~~Floating Roofs~~ Tanks in Operation: The requirements of Section 8-5-311 and 8-5-320 shall not apply to storage tanks during preventative maintenance of a vapor control device, roof repair, primary seal inspection, tanks awaiting or undergoing repairs conducted pursuant to Section 8-5-408, or removal and installation of a secondary seal if the following conditions are met:

112.1 Except for repairs conducted pursuant to Section 8-5-408, ~~The~~ the tank is in compliance with all District Regulations prior to the commencement of the work and is certified in accordance with Section 8-5-404.

112.2 Product shall be moved neither in nor out of the storage tank and emissions shall be minimized.

~~112.3 If an Authority to Construct is required, in accordance with Regulation 2, Rule 1, Section 301, then one shall be obtained.~~

112.4 The time of exemption, allowed under this section, does not exceed 7 days.

112.5 For any secondary seal replacement, the operator shall submitt written notification to the APCO at least seven days prior to the installation.

(Adopted 9/4/85; Amended May 4, 1988; January 20, 1993)

8-5-113 Deleted May 4, 1988

8-5-114 Deleted May 4, 1988

8-5-115 Deleted May 4, 1988

8-5-116 Exemption, Gasoline Storage Tanks at Gasoline Dispensing Facilities: The provisions of this Rule shall not apply to any underground gasoline storage tank located at a gasoline dispensing facility subject to the requirements of Regulation 8, Rule 7.(Adopted January 20

8-5-117 Exemption, Low Vapor Pressure: The provisions of this Rule shall not apply to ~~tanks storing organic liquids with a true vapor pressure of less than or equal to 25.8 mm Hg (0.5 psia) as determined by Sections 8-5-602 or 604.~~the following:

117.1 Storage tanks with a capacity not greater than 40,000 gal storing ~~exlusively~~exclusively inorganic liquids, and/or organic liquids with a true vapor pressure less than 0.5 psia.

117.2 Storage tanks with a capacity not greater than 530,000 gal, storing ~~exlusively~~exclusively inorganic liquids, and/or organic liquids with a true vapor pressure less than 0.25 psia.

117.3 Storage tanks storing ~~exlusively~~exclusively inorganic liquids, and/or organic liquids with a true vapor pressure less than 0.1 psia.

117.4 Regardless of the vapor pressure of liquid product stored, any tank using commercial natural gas or refinery fuel gas for blanketing is not exempt.

(Adopted January 20, 1993)

8-5-118 Exemption, Pressure-Vacuum Valve Repair and Replacement: The requirements of Section 8-5-311 shall not apply to a repair or replacement of a pressure-vacuum valve on a tank subject to this rule provided:

118.1 The repair or replacement is accomplished and the P-V valve is returned to service within 8 hours.

118.2 There is no liquid product moved into or out of the tank during the time of repair or replacement.

8-5-200 DEFINITIONS

8-5-201 Abatement Efficiency: A comparison of controlled emissions to those emissions which would occur from a fixed or cone roof tank in the same product service without a vapor ~~loss~~ control system, expressed as a percentage. Base line emissions shall be calculated using the criteria in API Bulletin 2518. (Amended January 20, 1993)

8-5-202 Storage Tank: Any stationary container, reservoir, or tank used for the storage of organic liquids and/or gases. (Adopted September 4, 1985)

8-5-203 Submerged Fill Pipe: Any discharge pipe or nozzle which meets either of the following conditions:

203.1 Where the tank is filled from the top, the end of the discharge pipe or nozzle must be totally submerged when the liquid level is ~~15 cm (~~6 inches~~.)~~ from the bottom of the tank.

203.2 Where the tank is filled from the side, the discharge pipe or nozzle must be totally submerged when the liquid level is ~~46 cm (~~18 inches~~.)~~ from the bottom of the tank. (Adopted September 4, 1985)

8-5-204 **Organic Liquid:** Any organic compound that exists as a liquid at actual conditions of use or storage. (Adopted September 4, 1985; Amended January 20, 1993)

8-5-205 **Gasoline:** Petroleum distillates used as motor fuel with a Reid vapor pressure greater than 4.0 psia. (Adopted September 4, 1985; Amended May 4, 1988)

8-5-206 ~~**Gas**~~ Vapor **Tight:** A concentration of organic compounds including methane, measured 1 cm or less from any source, of less than ~~10,000~~ 500 parts per million (ppm) total organic compounds ~~(~~expressed as methane~~)~~ above background. (Adopted May 4, 1988; Amended January 20, 1993)

8-5-207 **Approved Emission Control System:** A system for reducing emissions to the atmosphere that consists of a collection system and a control device, which is approved in writing by the APCO and achieves the overall abatement efficiency specified in the applicable standards section. (Adopted January 20, 1993)

8-5-208 **Degassing:** The process of removing organic gases from a tank. (Adopted January 20, 1993)

8-5-209 **External Floating Roof Tank:** An open top tank with a storage vessel cover consisting of a double deck or pontoon single deck which rests upon and is supported by the liquid being contained. (Adopted January 20, 1993)

8-5-210 **Internal Floating Roof Tank:** A fixed roof tank with a cover or roof which rests upon or is floated upon the liquid being contained. (Adopted January 20, 1993)

8-5-211 **True Vapor Pressure:** The vapor pressure of a liquid at storage temperature. (Adopted January 20, 1993)

8-5-212 **Organic Compound:** Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate. (Adopted January 20, 1993)

8-5-213 **Viewport:** An accessible opening in the fixed roof of an internal floating roof tank that measures at least ~~0.75 meters (~~30 inches~~)~~ on each side or at least ~~0.75 meters (~~30 inches~~)~~ in diameter. (Adopted January 20, 1993)

8-5-214 **Floating Roof Tank Seal:** A closure on the perimeter between the tank wall and the floating roof edge that reduces evaporation of hydrocarbons from the tank contents by reducing the area of the liquid exposed to air. Approved floating roof tank seals are categorized as follows, and explicitly categorized in Table II:

214.1 Category "A" seals are most effective in the control of volatile organic liquids and/or gases.

214.2 Category "B" seals are considered more effective than Category "C" seals.

214.3 Category "C" seals are currently in service but considered sufficiently ineffective to require upgrade upon replacement.

8-5-215 **Closed Vent System:** A system that is designed to collect all organic vapors and gases discharged from the storage tank to a gas recovery or vapor control device.

8-5-216 **Stock:** An organic liquid, gas or mixture stored in a vessel or container.

8-5-217 **Deck Fitting:** A functional or operational device on a tank that substantially closes or seals a penetration in the deck of a floating-roof tank.

8-5-218 **Vacuum Breaker:** A device that ~~equilizes~~equalizes the pressure of the vapor space beneath the deck as the deck is either being landed on or floated off its legs.

8-5-219 **Gauge Float:** A device to indicate the level of liquid within a tank. The float rests on the liquid surface inside a well in the tank.

8-5-220 **Guidepole:** An anti-rotational device that is fixed to the top and bottom of a tank, passing through a well in a floating roof. Guidepoles may be solid or be equipped with slots or holes for gauging purposes.

8-5-221 **Rim Vent:** A rim vent is used on tanks equipped with a seal design that creates a vapor pocket in the seal and rim area, such as a mechanical shoe seal. The vent is used to release any excess pressure of vacuum that is present in the vapor space bounded by the primary seal shoe, the floating roof rim, the primary seal fabric, and the liquid.

8-5-222 **Guide Pole Sleeve:** A device to prevent vapors from escaping through the guidepole or the gauge well slide mechanism, which allows movement between the guidepole and the floating roof.

8-5-223 **Zero Gap Pole Wiper Seal:** A seal with no gap exceeding 0.06 inches between the guidepole or the gauge well and pole wiper seal.

8-5-224 **Total Organic Compounds:** The concentration of organic compounds as indicated by a hydrocarbon analyzer as specified by Section 8-5-503, including methane.

8-5-225 **Liquid Balancing:** Replacement of one stock with another without landing the roof. This procedure occurs prior to taking a floating roof out of service, and replaces the stored liquid with another with much lower volatility before creating a vapor space between the liquid surface and the roof.

8-5-300 STANDARDS

8-5-301 **Storage Tanks Smaller than 40,000 gal ~~150m^3~~:** A person shall not store organic liquid with a true vapor pressure of greater than ~~25.8 mm Hg (~~0.5 psia~~)~~ in any storage tank less than or equal to **~~150~~** ~~m^3 (39,626 gal)~~ 40,000 gal capacity unless such tank is equipped with one of the following:

301.1 A submerged fill pipe.

301.2 An apparatus of equal efficiency to a submerged fill pipe which has been approved by the APCO.

301.3 A vapor ~~loss~~ control device which complies with the requirements set forth in Section 311. (Amended September 4, 1985; May 4, 1988; January 20, 1993)

8-5-302 **Above Ground Gasoline Storage Tanks Smaller than 20,000 gal ~~75 m^3~~:** A person shall not store gasoline in any above ground storage tank of ~~75 m^3 (19,813 gal)~~ 20,000 gal or less capacity unless such tank is equipped with a pressure-vacuum valve which is set to either a pressure within 10% of the maximum allowable working pressure of the tank or at least ~~25.8 mm Hg (~~0.5 psig~~a)~~ pressure or is equipped with a vapor ~~loss~~ control device which complies with the requirements set forth in Section 311.

(Amended September 4, 1985; May 4, 1988; January 20, 1993)

8-5-303 **Above Ground Storage Tanks Larger than 10,000 gal ~~37.5 m^3~~ and Smaller than 20,000 gal ~~75 m^3~~:** A person shall not store any organic liquid with a true vapor pressure greater ~~than 77.5 mm Hg (~~10.5 psia~~)~~ in any above ground storage tank with a capacity greater than ~~37.5 m^3 (9,906~~10,000 gal~~)~~ and less than ~~75 m^3 (19,813~~20,000 gal~~)~~ unless such tank is equipped with a pressure-vacuum valve which is set to either a pressure within 10% of the maximum allowable working pressure of the tank or at least ~~25.8 mm Hg (~~0.5 psig~~a)~~ pressure or is equipped with a vapor ~~loss~~ control device which complies with the requirements set forth in Section 8-5-311 .

(Adopted September 4, 1985; Amended May 4, 1988; January 20, 1993)

8-5-304 **Storage Tanks Larger than 20,000 gal ~~75 m^3~~:** A person shall not store organic liquid in any storage tank with a capacity greater than ~~75 m^3 (19,813 gal)~~20,000 gal unless such tank meets the following conditions:

304.1 Storage tanks with a capacity greater than ~~75 m^3 (19,813 gal)~~20,000 gal but less than ~~150 m^3 (39,626 gal)~~40,000 gal storing an organic liquid with a true vapor pressure greater than ~~77.5 mm Hg (~~1.5 psia~~)~~ must meet the requirements of Section 8-5-311.

304.2 Storage tanks with a capacity of ~~150 m^3 (39,626~~40,000 gal~~)~~ or greater storing an organic liquid with a true vapor pressure greater ~~than 25.8 mm Hg (~~0.5 psia~~)~~ must meet the requirements of Section 8-5-311.

304.3 Effective at the next turnaround, but no later than July 1, 2003, storage tanks with a capacity greater than 265,000 gal storing an organic liquid with a true vapor pressure greater than 0.25 psia must meet the requirements of Section 8-5-311.

304.4 Effective at the next turnaround, but no later than January 1, 2005, storage tanks with a capacity greater than 530,000 gal storing an organic liquid with a true vapor pressure greater than 0.1 psia must meet the requirements of Section 8-5-311.

304.5 Effective at the next turnaround, but no later than January 1, 2005, storage tanks with a capacity greater than 20,000 gal storing an organic liquid with a true vapor pressure greater than 0.1 psia which utilize a natural gas or refinery gas blanket must meet the requirements of Section 8-5-311.

304.6 Effective January 1, 2001, storage tanks with a capacity greater 530,000 gal storing an organic liquid with a true vapor pressure equal to or less 0.1 psia must meet a vapor tight condition.

(Amended, Renumbered 9/4/85; Amended May 4, 1988; January 20, 1993)

8-5-305 Storage Tanks Storing Organic Liquids with a True Vapor Pressure Greater than 11 psia: A person shall not store organic liquid with a true vapor pressure of ~~569 mm Hg (~~11 psia~~)~~ or greater under storage conditions in any storage tank unless such tank is a vapor tight pressure tank ~~maintaining working pressures sufficient at all times to prevent organic vapor or gas loss to the atmosphere~~, or designed and equipped with a vapor ~~loss~~ control device which meets the requirements of Section 8-5-311.3.

(Adopted 9/4/85; Amended May 4, 1988; January 20, 1993)

8-5-310 Deleted May 4, 1988

8-5-311 Vapor ~~Loss~~ Control Device Requirements: The vapor ~~loss~~ control device shall be one of the following:

311.1 An external floating roof equipped with a primary and secondary seal which meet the requirements of Section 8-5-320, 321 and 322. The floating roof must be on the surface of the liquid and must be properly maintained in good operating order. There shall be no organic liquid on top of the floating roof or above the primary and/or secondary seal. Rim vents must be gasketed, secured after initial tank filling, and must be in a vapor-tight condition during normal operation. Rim vents are to be set to open only when the floating roof is not floating or when the pressure beneath the rim seal exceeds the manufacturer's recommended setting.

311.2 An internal floating roof. The internal floating roof must be on the surface of the liquid content and must be properly maintained in good operating order. There shall be no organic liquid on top of the floating roof or the seal. The ~~An~~ internal floating roof ~~which satisfies~~ shall satisfy one of the following conditions:

2.1 A liquid mounted primary seal, mounted in full contact with the liquid in the annular space between the tank shell and floating roof if seals were installed before February 1,1993; or

2.2 A vapor mounted primary and a secondary seal if seals were installed before February 1, 1993; or

2.3 A liquid mounted primary and a secondary ~~seal which~~seal, which satisfies the requirements of Sections 8-5-321 and 322, if the seals were installed on or after February 1, 1993. After December 1, 1999, any replacement of a primary, secondary or wiper seal shall be upgraded to a Category "A" or "B" seal.

2.4 The concentration of organic vapor in the vapor space above the internal floating-type cover shall not exceed 50 percent of its lower explosive limit (LEL) for seals installed before February 1, 1993 and 30 percent of its LEL for seals installed after February 1, 1993. Measurement shall be in accordance with Section 8-5-607.

311.3 ~~An Approved Emission Control System~~ A combustion device, closed vent system or vapor recovery system which collects and processes ~~all~~ organic vapors and gases and meets the following conditions: ~~has an abatement efficiency of at least 95% by weight.~~

3.1 A vapor recovery or collection system must have an overall efficiency of at least 95% by weight.

3.2 A combustion device must have a destruction efficiency of at least 98% by weight.

(Amended January 20, 1993)

8-5-312 Deleted January 20, 1993

8-5-313 Deleted January 20, 1993

8-5-314 Deleted January 20, 1993

8-5-320 Tank Fitting Requirements: The fittings on any ~~floating roof~~ storage tank subject to Section 8-5-311 shall meet the following conditions:

320.1 ~~Any secondary seal shall extend from the roof to the tank shell and shall not be attached to the primary seal.~~ All deck fittings must be fully gasketed and be in a vapor-tight condition. Vacuum breaker vents must be gasketed and be maintained in a vapor-tight condition. Deck fittings include but are not limited to access hatches, fixed roof support columns, gauge floats, gauge hatch/sample ports, vacuum breakers, deck drains, rim vents, ladders and slotted or unslotted guidepoles.

320.2 All openings in the roof, except pressure-vacuum valves, shall meet the following conditions:

2.1 The opening shall provide a projection below the liquid surface to prevent belching of liquid and reduce escaping organic vapors.

2.2 ~~The viewports and other openings, except floating roof legs, shall be equipped with a gasketed cover, seal or lid, which shall at all times be in a closed position with no measurable gap exceeding 0.32 cm (1/8 in.), except when the opening is in use. Effective June 1, 1993, viewports and~~All other openings, except floating roof legs, shall be equipped with a gasketed cover, seal or lid.

2.3 For inaccessible openings on internal floating roof tanks, there shall be no visible gaps as viewed from the fixed roof manway, except when the opening is in use.

2.4 All piping, valves and fittings must be constructed and maintained in a vapor tight condition.

320.3 Pressure-vacuum valves shall be set to within 10% of the maximum allowable working pressure of the roof or at least ~~25.8 mm Hg (~~0.5 psia~~)~~, and shall be properly installed, properly maintained, and in good operating order; and shall remain in a ~~gas~~ vapor tight condition except when operating pressure exceeds the valve set pressure. By July 1, 2000, the owner or operator of the facility shall provide a list of tanks to the APCO with the maximum working pressure and the P-V valve setting.

320.4 Solid sampling or gauging wells, and similar fixed projections through a floating roof such as an anti-rotational pipe, shall meet the following conditions:

4.1 The well shall provide a projection below the liquid surface.

4.2 The well shall be equipped with a cover, seal or lid, which shall at all times be in a closed position with no gap exceeding ~~0.32 cm (~~1/8 in.~~)~~, except when the well is in use.

4.3 The gap between the well and the roof shall be added to the gaps measured to determine compliance of the secondary seal and in no case shall exceed ~~1.3 cm (~~1/2 inch~~.)~~.

320.5 Slotted sampling or gauging wells shall meet the following conditions:

5.1 The well shall provide a projection below the liquid surface.

5.2 Effective June 1, 2000, ~~The~~ the well shall be equipped with the following: a sliding cover, well gasket, a pole sleeve, pole wiper and an internal float and float wiper designed to minimize the gap between the float and the well, provided that the gap shall in no case exceed ~~1.3 cm (~~1/2 inch~~.)~~, or shall be equipped with a well gasket, a zero gap pole wiper seal and a pole sleeve that projects below the liquid surface.

5.3 The gap between the well and the roof shall be added to the gaps measured to determine compliance of the secondary seal and in no case shall exceed ~~1.3 cm (~~1/2 inch~~.)~~.

320.6 Any emergency roof drain shall be provided with a slotted membrane fabric cover, or equivalent, that covers at least 90% of the area of the opening.

(Amended 9/4/85; May 4, 1988; January 20, 1993)

8-5-321 Primary Seal Requirements: A person shall not operate a storage tank equipped with a primary seal subject to the requirements of Section 8-5-311 unless such tank meets the following conditions:

321.1 There shall be no holes, tears, or other openings in the primary or secondary seal fabric which allow the emission of organic vapors.

321.2 The seal shall be liquid mounted except as provided in subsection 8-5-311.2.2.

321.3 Metallic-shoe-type seals shall be installed so that one end of the shoe extends into the stored liquid and the other end extends a minimum vertical distance of ~~61 cm (~~24 inches~~.)~~ for external floating roofs and 18 inches for internal floating roofs above the stored liquid surface.

3.1 The geometry of the shoe shall be such that the maximum gap between the shoe and the tank shell is no greater than double the gap allowed by the seal gap criteria for a length of at least ~~46 cm (~~18 inches~~.)~~ in the vertical plane above the liquid surface.

3.2 For welded tanks, no gap between the tank shell and the primary seal shall exceed ~~3.8 cm (~~1-1/2 inches~~.)~~. No continuous gap greater than ~~0.32 cm (~~1/8 inch~~.)~~ shall exceed 10% of the circumference of the tank. The cumulative length of all primary seal gaps exceeding ~~1.3 cm (~~1/2 inch~~.)~~ shall be not more than 10% of the circumference, and the cumulative length of all primary seal gaps exceeding ~~0.32 cm (~~1/8 inch~~.)~~ shall be not more than 40% of the circumference.

3.3 For riveted tanks, no gap between the tank shell and the primary seal shall exceed ~~6.4 cm (~~2-1/2 inch~~.)~~. The cumulative length of all primary seal gaps exceeding ~~3.8 cm (~~1-1/2 inch~~.)~~ shall be not more than 10% of the circumference.

321.4 For resilient-toroid-seal equipped tanks, no gap between the tank shell and the primary seal shall exceed ~~1.3 cm (~~1/2 inch~~.)~~. The cumulative length of all gaps exceeding ~~0.32 cm (~~1/8 inch~~.)~~ shall be not more than 5% of the circumference. (Amended Janua

8-5-322 Secondary Seal Requirements: A person shall not operate a storage tank equipped with a secondary seal subject to the requirements of Section 8-5-311, unless such tank meets the following conditions:

322.1 There shall be no holes, tears, or other openings in the secondary seal fabric which allow the emission of organic vapors.

322.2 The secondary seal shall allow easy insertion of probes up to ~~3.8 cm (~~1-1/2 inches~~.)~~ in width in order to measure gaps in the primary seal.

322.3 For welded tanks, no gap between the tank shell and the secondary seal shall exceed ~~1.3 cm (~~1/2 inch~~.)~~. The cumulative length of all secondary seal gaps exceeding ~~0.32 cm (~~1/8 inch~~.)~~ shall be not more than 5% of the circumference of the tank.

322.4 For riveted tanks, the secondary seal shall consist of at least two sealing surfaces, such that the sealing surfaces prevent the emission of organic compounds around the rivets. Serrated sealing surfaces are allowable if the length of serration does not exceed ~~15.2 cm (~~6 inches~~.)~~ No gap between the tank shell and the secondary seal shall exceed ~~1.3 cm (~~1/2 inch~~.)~~. The cumulative length of all secondary seal gaps exceeding ~~0.32 cm (~~1/8 inch~~.)~~ shall be not more than 5% of the circumference.

322.5 For welded external floating roof tanks with seals installed after September 4, 1985 or welded internal floating roof tanks with seals installed after February 1, 1993, no gap between the tank shell and the secondary seal shall exceed ~~1.5 mm (~~0.06 inch~~.)~~. The cumulative length of all secondary seal gaps exceeding ~~0.5 mm (~~0.02 inch~~.)~~ shall be not more than 5% of the circumference of the tank excluding gaps less than ~~5 cm (~~1.79 inch~~.)~~ from vertical weld seams.

322.6 Any secondary seal shall extend from the roof to the tank shell and shall not be attached to the primary seal.

(Amended January 20, 1993)

8-5-323 Deleted January 20, 1993

8-5-324 Deleted January 20, 1993

8-5-325 Deleted January 20, 1993

8-5-326 Deleted May 4, 1988

8-5-327 Deleted May 4, 1988

8-5-328 Tank ~~Cleaning~~ Degassing Requirements: ~~Effective June 1, 1993, the~~The emissions of organic compounds resulting from degassing a tank subject to the requirements of Section 8-5-304 shall be controlled by one of the following methods:

328.1 Liquid Balancing in which the resulting organic liquid has a true vapor pressure less than 0.~~5~~ 1 psia.

328.2 An Approved Emission Control System which collects and processes all organic vapors and gases and has an abatement efficiency of at least 90% by weight. The system shall be operated until the concentration of total organic compounds in the tank is less than 10,000 ppm expressed as methane.

(Adopted January 20, 1993)

8-5-329 Ozone Excess Day Prohibition: Except as provided in Section 8-5-328, tank degassing and tank cleaning shall not commence after the District predicts an excess of the Federal or State Ambient Air Quality Standard for ozone for the following day.

(Adopted January 20, 1993)

8-5-330 Viewport Installation: Effective February 1, 1993, all internal floating roof tanks 30 feet or greater in diameter subject to the requirements of Sections 8-5-311, 321 ~~and~~ or 322 that have been degassed shall be equipped with at least 3 viewing ports. Effective July 1, 2000, all internal floating roor tanks less than 30 feet in diameter subject to the requirements of Sections 8-5-311, 321 or 322 that have been degassed shall be equipped with at least one viewing port.

(Adopted January 20, 1993)

8-5-331 Seal Replacement: Tank seals may be replaced only in accordance with the following: Category "A" seals shall be replaced only by Category "A" seals. Category "B" seals shall be replaced only by Category "A" or "B" seals. Category "C" seals shall be replaced only by Category "A" or "B" seals. Seal categories are contained in Table II.

8-5-400 ADMINISTRATIVE REQUIREMENTS

8-5-401 Primary Seal Inspection: For all tanks equipped with primary seals subject to the requirements of Section 8-5-311, the seal shall be inspected for compliance with Section 8-5-321 by the operator at the following times:

~~401.1 Once every 10 years for tanks subject to the requirements of subsection 8-5-322.5.~~

401.2 After December 1, 1993, once every 10 years for tanks subject to the requirements of subsection 8-5-311.2.

401.3 Once every 5 years for all other tanks. (Amended January 20, 1993)

8-5-402 Secondary Seal and Fitting Inspection: For all tanks equipped with secondary seals subject to the requirements of Section 8-5-311, the seal and all fittings shall be inspected for compliance with Sections 8-5-320 and 322 by the operator at the following times:

402.1 Once every ~~10~~ 5 years for tanks subject to the requirements of subsection 8-5-322.5.

402.2 After December 1, 1993, once every 10 years for tanks subject to the requirements of subsection 8-5-311.2.

402.3 ~~A~~semi-annually for all other tanks.

(Amended January 20, 1993)

8-5-403 Internal Floating Roof Tank ~~Visual~~ Inspection: ~~Effective February 1, 1993, all~~All internal floating roof tanks subject to the requirements of Section 8-5-311 shall be ~~visually~~ inspected semi-annually by the operator for compliance with Sections 8-5-311.2, 320.2.3, 321.1 and 322.1. (Amended January 20, 1993)

8-5-404 Certification: A report on the seal condition, gap allowances of primary and secondary seals and tank degassing equipment as prescribed in this regulation shall be submitted as follows:

404.1 For all primary seals, certification of actual gap measurements shall be submitted upon installation of such primary seals, replacement of such primary seals, or prior to installation of secondary seals, and at least every 5 years following such installation or replacement unless the secondary seal is subject to the requirements of subsection 8-5-311.2 or 322.5, then the certification shall be done at least every 10 years.

404.2 For all secondary seals, certification of actual gap measurements shall be submitted as follows:

2.1 On ~~an~~ a semi-annual basis for tanks subject to the requirements of subsection 311.1. The time interval between tank certifications shall not exceed ~~15~~ 8 months.

2.2 At least once every 10 years for tanks subject to the requirements of subsection 311.2.

404.3 For all ~~tank~~ tank degassing equipment, the results of an annual source test verifying compliance with the provisions in subsection 8-5-328.2 shall be submitted on an annual basis.

(Amended, Renumbered 9/4/85; Amended May 4, 1988; January 20, 1993)

8-5-405 Information Required: All reports relating to seal condition and gap measurements shall include the following information:

405.1 Date of inspection.

405.2 Actual gap measurements between the tank shell and seals, both the primary seal and the secondary seal, shall be measured around the full circumference of the tank.

405.3 Data, supported by calculations, showing whether or not the requirements of Sections 8-5-320, 321 and 322 are being met.

(Amended, Renumbered 9/4/85; Amended May 4, 1988; January 20, 1993)

8-5-406 Fitting and Pressure-Vacuum Valve Inspection: For all tanks equipped with pressure-vacuum valve subject to the requirements of Section 8-5-311, fittings and P-V valves shall be inspected on quarterly basis for compliance with the vapor tight requirement.

8-5-407 Inspection and Maintenance Plan: The owner or operator of any tank subject to this rule shall maintain an inspection and maintenance plan. On or before January 1, 2000, each owner or operator shall submit the plan to the APCO for approval. The plan shall include an inventory of tanks subject to this rule, the proposed inspection schedule and a copy of the owner or operator's safety procedures used for storage tanks. The tank inventory shall include tank identification number, maximum design capacity, product, shell type, dimensions, seal type, P-V valve setting and manufacturer, floating roof type, date of construction and location.

8-5-408 Self Reporting: No District enforcement action will be taken regarding as a result of non-compliance with a provision of this rule, provided the following criteria are met:

408.1 The non-compliance is reported to the District by telephone within 24 hours of discovery

408.2 The report is submitted to the District before a notice of Violation has been issued.

408.3 The non-compliance is eliminated within 72 hours of discovery.

408.4 A written report is submitted to the APCO within 120 hour of the discovery of non-compliance. The report shall include a description of the problem, a description of the action taken to correct the problem, and an estimate of the excess emissions resulting from non-compliance.

8-5-410 Deleted May 4, 1988

8-5-500 MONITORING AND RECORDS

8-5-501 Records: A person whose tanks are subject to this rule shall keep an accurate record of liquids stored and the true vapor pressure ranges of such liquids. The record shall consist of a District-approved log, and shall include the date of any stock changes

(Amended January 20, 1993)

8-5-502 **Tank Degassing ~~Cleaning~~ Annual Source Test Requirement:** Any person operating an Approved Emission Control System to comply with the requirements of subsection 8-5-328.2 shall test the system annually as prescribed in subsection 8-5-603.2.

(Adopted January 20, 1993)

8-5-503 **Portable Hydrocarbon Detector:** Any instrument used for the measurement of organic compounds shall be a combustible gas indicator that meets the specifications and performance criteria of and has been calibrated in accordance with EPA Reference Method 21 (40 CFR 60, Appendix A). (Adopted January 20, 1993)

8-5-504 **Recordkeeping Requirements:** The owner or operator of any storage tank that is subject to this rule, shall record and maintain all reports for at least two years. All inspections shall be recorded on District-approved compliance report forms.

8-5-505 **Pressure Release:** After any release from a closed vent or vapor recovery system with a pressure-vacuum device shall be returned to a condition of vapor tight, as indicated by an instrument reading of less than 500 ppm total organic compounds, above background, as soon as practicable, but no later than 5 ~~calender~~calendar days after the pressure release. The P-V valve must be re-inspected within 5 days after actuation to confirm compliance with Regulation 8, Rule 5 and results reported in accordance with Section 8-5-504.

8-5-506 **Unsafe to Inspect:** If the owner or operator determines that the equipment is unsafe to inspect because District inspection personnel would be exposed to an ~~iminent~~imminent or potential danger, the inspection may be delayed up to 30 ~~calender~~calendar days. If a delay is required, identification of the tank that is designated as unsafe to inspect, an explanation of why the equipment is unsafe to inspect, and a written plan for inspection shall be submitted within 10 days.

8-5-507 **Vapor Control Device Testing Requirement:** Any device subject to Section 8-5-311.3 shall be tested for recovery efficiency and destruction efficiency (if applicable) on an annual basis.

8-5-600 MANUAL OF PROCEDURES

8-5-601 **Analysis of Samples, Reid Vapor Pressure**: Samples of organic compounds as specified in this Rule shall be analyzed for Reid Vapor Pressure as prescribed in the Manual of Procedures, Volume III, Lab Method 13.

(Amended September 4, 1985; May 4, 1988)

8-5-602 **Analysis of Samples, True Vapor Pressure:** Samples of organic compounds not listed in Table I shall be analyzed for true Vapor Pressure at the tank storage temperature as prescribed in the Manual of Procedures, Volume III, Lab Method 28.

(Adopted September 4, 1985; Amended May 4, 1988)

8-5-603 **Determination of Emissions:** Emissions of organic compounds shall be determined as follows:

603.1 Emissions of organic compounds as specified in subsection 8-5-311.3 shall be measured as prescribed in the Manual of Procedures, Volume IV, ST-4.

603.2 Emissions of organic compounds as specified in subsection 8-5-328.2 shall be measured as prescribed in the Manual of Procedures, Volume IV, ST-7.

(Renumbered September 4, 1985; Amended January 20, 1993)

8-5-604 **Determination of Applicability**: Table I shall be used to determine if a storage tank is subject to the requirements of this rule. For organic compounds not listed in Table I, refer to Sections 8-5-601, ~~or~~ 602, or 606.

(Adopted 9/4/85; Amended May 4, 1988; January 20, 1993)

8-5-605 **Pressure-Vacuum Valve ~~Gas~~ Vapor Tight Determination:** Determination of organic compound leak concentrations as specified by subsection 8-5-320.3 shall be conducted by EPA Reference Method 21 (40 CFR 60, Appendix A).

(Adopted January 20, 1993)

8-5-606 **Low Vapor Pressure Liquid Determination:** ~~Determination~~Determination of true vapor ~~pressue~~pressure for a petroleum mixture with a low vapor pressure (below 0.5

psia) shall be determined by a headspace gas chromatography method, such as EPA Method 18, ARB Method 422 or equivalent. Maxwell and Bonnel equations may be used until a true vapor pressure has been determined using headspace a gas chromatographic method.

8-5-607 Determination of Lower Explosive Limit (LEL): The determination of compliance with the LEL standards in Section 8-5-311.2 shall be made at a distance of 3 feet inside any tank perpendicular to the hatch opening. <Method language to be presented at workshop>

TABLE I

STORAGE TEMPERATURE VERSUS TRUE VAPOR PRESSURE (TVP)

	Density (lb/gal)	Reference Gravity API	IBP ^{o}F	Max. Temp. ^{0}F Not to Exceed 0.1 PSIA TVP	0.5 Psia TVP	1.5 Psia TVP
Crude Oils:*						
San Joaquin Valley	-	-	390	-	249	-
Middle Distillates:						
Kerosene	-	42.5	350	117	195	250
Diesel	-	36.4	372	130	230	290
Gas Oil	-	26.2	390	135	249	310
Stove Oil	-	23	421	174	275	340
Jet Fuels:						
JP-1	-	43.1	330	115	165	230
JP-3	-	54.7	110	-	-	25
JP-4	-	51.5	150	-	20	68
JP-5	-	39.6	355	122	205	260
JP-7	-	44-50	360	124	205	260
Fuel Oil:						
No. 1	-	42.5	350	117	195	250
No. 2	-	36.4	372	130	230	290
No. 3	-	26.2	390	135	249	310
No. 4	-	23	421	174	275	340
No. 5	-	19.9	560	268	380	465
No. 6	-	16.2	625	330	450	-
Asphalts:						
60-100 pen.	-	-	-	-	490	550
120-150 pen.	-	-	-	-	450	500
200-300 pen.	-	-	-	-	360	420
Organic Compounds:						
Acetone	6.6	47	133	-	-	35
Acrylonitrile	6.8	41.8	173	-	30	62
Benzene	7.4	27.7	176	-	34	70
Carbon Disulfide	10.6	22.1	116	-	-	10
Carbon Tetrachloride	13.4	-	170	-	20	63
Chloroform	12.5	-	142	-	-	40
Cyclohexane	6.5	49.7	177	-	30	65
1,2 Dichloroethane	10.5	-	180	-	35	75
Ethyl Acetate	7.5	23.6	171	-	38	70
Ethyl Alcohol	6.6	47.0	173	-	55	85
Isopropyl Alcohol	6.6	47.0	181	-	62	95
Methyl Alcohol	6.6	47.0	148	-	30	62
Methyl Ethyl Ketone	6.7	44.3	175	-	30	70
Toluene	7.3	30	231	-	75	120
Vinylacetate	7.8	19.6	163	-	30	65

* True vapor pressure for crude oils should be determined from the specific crude slate.

TABLE II

FLOATING ROOF TANK SEAL CATEGORIES

PRIMARY SEALS

CATEGORY A	CATEGORY B	CATEGORY C
1. Liquid mounted multiple wipers with drip curtain and weight	1. Liquid mounted single wiper with drip curtain and weight	1. Liquid mounted single wiper
2. Liquid mounted mechanical shoe	2. Liquid mounted double foam wipers with vapor curtain	2. Liquid mounted foam log
3. Other seal design deemed equivalent by the APCO.	3. Vapor mounted primary wiper	3. Liquid mounted foam log with vapor curtain
	4. Vapor mounted E wiper	4. Liquid mounted resilent toriod type liquid filed log
	5. Vapor mounted double wipers	5. Vapor mounted foam log/bag
	6. Vapor mounted double foam wipers	6. Vapor mounted foam wiper
	7. Vapor mounted multiple wipers	
	8. Other seal design deemed equivalent by the APCO	

SECONDARY SEALS

CATEGORY A	CATEGORY B	CATEGORY C
1. Multiple wipers	1. Single wiper	1. Liquid Mounted wiper
2. Other seal design deemed equivalent by the APCO	2. Other seal design deemed equivalent by the APCO	2. Foam log/bag
		3, Maloney

Criteria used for categorization of floating roof tank seals:

1. Emission control effectiveness design
2. Ability to maintain contact with tank wall
3. Longevity in service